

IN THE CLAIMS

Please cancel claims 1-20 and enter new claims 30-50.

30. (New) A method of isolating high molecular weight nucleic acid from a biological material which comprises mechanically releasing the high molecular weight nucleic acid from the material by the application of rapidly oscillating reciprocal mechanical energy to the material in the presence of a liquid medium in a closed container to produce a released high molecular weight nucleic acid solution, wherein the released high molecular weight nucleic acid solution has an average molecular weight greater than 10 kilobases, the liquid medium contains one or more particles and detergent in an amount of from 0.1% to 10% weight per weight (w/w), wherein when the liquid medium contains more than one particle, the particles are identical or vary in size, shape, and density, and wherein the application of the energy is conducted by subjecting the container and thereby the material to oscillations at an oscillatory rate of between about 25 hertz (Hz) to about 166 Hz for a period of time of between about 3 seconds to about 5 minutes.

31. (New) The method of claim 30, wherein the particles occupy a volume equal to about 5% to 80% of the liquid medium volume.

32. (New) The method of claim 30, wherein the one or more particles is one spherical bead.

33. (New) The method of claim 32, wherein the container has substantially cylindrical walls and the spherical bead has a diameter of about 3 to 10 mm, and clearance between the spherical bead and the inner container wall is from about 0.025 to 3.0 mm.

34. (New) The method of claim 32, wherein the spherical bead occupies a volume equal to from about 5% to 80% of the liquid medium volume.

35. (New) The method of claim 30, wherein the biological material is a medium soft tissue, the oscillatory rate is about 100 Hz producing about 300 x g, and the time period is about 20 to 45 seconds.

36. (New) The method of claim 35, wherein the medium soft tissue is selected from the group consisting of heart, muscle, blood vessels, tumor or tissue biopsies, immature plant tissue, fruit, flowers, sprouts, young leaves, nematodes, culture cells, and bacteria.

37. (New) The method of claim 30, wherein the biological material is a medium hard tissue, the oscillatory rate is about 100 Hz producing about 300 x g, and the time period is about 20 to 45 seconds.

38. (New) The method of claim 37, wherein the one or more particles is one spherical bead.

39. (New) The method of claim 38, wherein the container has substantially cyclindrical walls, the spherical bead has a diameter of about 3 to 10 mm, and clearance between the spherical bead and the inner container wall is from about 0.025 to 3.0 mm.

40. (New) The method of claim 39, wherein the clearance is about 1 mm.

41. (New) The method of claim 37, wherein the medium hard tissue is selected from the group consisting of skin, cartilage, soft bone, tail snips, ear snips, mature plant tissue such as mature leaves, stems, tubers, legumes, chitinous tissues, whole insects, slime mold, yeast, algae, viruses, and fungi.

42. (New) The method of claim 30, wherein the biological material is a hard tissue, the oscillatory rate is about 100 Hz producing about 300 x g, the time period is about 30 to 60 seconds, and said container includes one or more steel spherical particles having a volume of about 1 to 50% of the liquid medium volume.

43. (New) The method of claim 42, wherein the container has substantially cyclindrical walls, the spherical bead has a diameter of about 3 to 10 mm, and clearance between the spherical bead and the inner container wall is from about 0.025 to 3.0 mm.

44. (New) The method of claim 42, wherein the hard tissue is selected from the group consisting of seeds, bark, plant stems, tree trunks, rice soybean, oats, wheat, corn leaf, kernels, grains, roots, bones, soil, and fossils.

45. (New) The method of claim 30, further comprising recovering the high molecular weight nucleic acid from the liquid medium.

46. (New) The method of claim 45, wherein the recovering comprises treating the sample with an organic extraction procedure, a chaotropic salt procedure, or an enzymatic procedure prior to isolating the high molecular weight nucleic acid.

47. (New) The method of claim 46, wherein the high molecular weight nucleic acid is isolated by lyophilization, freeze-drying, salt precipitation, or chromatographic methods..

48. (New) The method of claim 45, wherein the recovering comprises removing non-high molecular weight nucleic acid components from the liquid medium by binding the components to a solid support.

49. (New) The method of claim 45, wherein the recovering comprises removing non-high molecular weight nucleic acid components from the liquid medium by selectively precipitating or chromatographically removing the components.

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50. (New) The method of claim 45, wherein the recovering comprises removing high molecular weight nucleic acid components from the liquid medium by selectively precipitating the high molecular weight nucleic acid from non-high molecular weight components.